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Retraction

Retracted: Prediction of Higher Education Cost and Analysis of Sharing Ability Based on Artificial Neural Network

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope

(2) Discrepancies in the description of the research reported

(3) Discrepancies between the availability of data and the research described

(4) Inappropriate citations

(5) Incoherent, meaningless and/or irrelevant content included in the article

(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] Z. Xia, X. Yue, F. Niu, and Z. Hu, "Prediction of Higher Education Cost and Analysis of Sharing Ability Based on Artificial Neural Network," *Security and Communication Networks*, vol. 2022, Article ID 7649918, 11 pages, 2022.

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Research Article

Prediction of Higher Education Cost and Analysis of Sharing Ability Based on Artificial Neural Network

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In order to explore how to realize the cost prediction and sharing ability of higher education, this paper proposes an analysis of the cost prediction and sharing ability of higher education based on artificial neural network. This method explores how to realize the cost prediction of higher education through the key technical problems and solutions of information recommendation based on artificial neural network. The research shows that the ability of college education cost prediction and sharing based on artificial neural network is 61% higher than that of traditional cost prediction and sharing. With the help of BP neural network algorithm, the accuracy of cost prediction can be maintained above 90%. It is proved that the artificial neural network algorithm can effectively improve the cost forecasting, financial system, and cost management system of colleges and universities.

1. Introduction

The development of science and technology and the success of society have affected all areas of life to varying degrees and improved the environment of colleges and universities, and the colleges have also undergone earth-shaking changes. The development of higher education has entered an unprecedented new situation [1]. In recent years, with the further support of teaching activities in colleges and universities in my country, such activities have become more and more difficult, and there are more and more jobs. Capital spending by colleges and universities also showed some improvement. This also makes colleges and universities pay more and more money for supervision and management [2]. Higher education cost management and accounting is very important and even becomes an important component of financial management in colleges and universities. Therefore, on the basis of cost accounting, on the basis of clarifying the dependent variables and independent variables of university cost control, cost accounting, and cost sharing ability, combined with neural network algorithm, this paper has made a key research on cost prediction [3].

Internet education is about the application of information technology in education (educational management, teaching research) and the promotion of education and training through the development and implementation of educational materials. Its technical characteristics are digitalization, networking, intelligence, and multimedia. Its basic characteristics are openness, sharing, interaction, and cooperation. Internet education is used to promote educational modernization, and information technology is used to change the traditional mode [4]. Compared with traditional models, online learning has advantages in data transfer, data quality, data rate, and data exchange as shown in Figure 1.

2. Literature Review

With the prevalence of cost sharing theory in the field of higher education, since 1990, the subject of cost sharing in American higher education has shifted from the government to other subjects [5]. First is the university itself. American universities invest in the capital market by actively participating in scientific research projects cooperating with enterprises, establishing science and technology parks, establishing companies, applying for patents, venture capital, etc.; secondly, students pay tuition fees, especially private nonprofit universities, whose tuition level and the

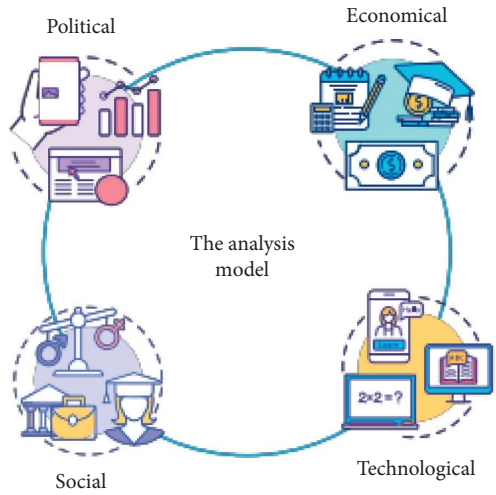

Figure 1: Education informatization development model.

proportion of tuition fees in middle-income families have always been far ahead of all types of universities [6]. Third is the society. Private universities use tuition discounts to collect tuition fees, so the increase in their social donation income is higher than that of tuition fees. That is to say, private universities mainly rely on social donation funds to maintain their normal operation. In addition, the government, higher education institutions, and private organizations also provide financial assistance to poor students, such as student loans, scholarships and grants, and tax subsidies. It can be said that in American universities, grants, student loans, and private universities have built a unique financial model: high tuition/high aid.

The theory of higher education cost sharing is developed on the basis of human capital theory and public goods theory [7]. First of all, the human capital theory gave birth to the concept of education cost. The value of the resources consumed in the production of education is education cost. Education cost includes social actual cost and indirect cost of education, and personal actual cost and indirect cost of education. Secondly, the human capital theory regards education as an investment with economic value, which can bring not only personal benefits, but also a wide range of social benefits. The level of personal and social returns brought by education has become a realistic measure for the cost sharing of national and social investment in education [8]. Beyond a certain scale, private higher education will show limited competitiveness and limited exclusivity in consumption, but private higher education can bring huge positive external effects. This positive externality is manifested in two aspects: the individual educatee and the national society. On the one hand, through receiving higher education, the individual educatee gains an increase in knowledge, ability, social status, and economic income; on the other hand, private higher education has made an important contribution to the popularization of higher education in China and the accumulation of human capital in the country. Moreover, private higher education has reduced the financial pressure on the development of higher education in the country because of its self-financing investment mode. These funds can be used to develop basic education with higher social return. Therefore, we say that private higher education is a quasi-public product between public products and private products, and a public welfare undertaking that reflects the national interests [9]. Based on its public welfare and quasi-public product attributes, the supply of private higher education products should be shared by the government, market, and society.

3. Method

3.1. Theoretical Basis of Algorithm. The BP neural network algorithm includes two stages: forward presentation and backward presentation. The so-called forward propagation stage means that the sample data are calculated and processed by the hidden nodes in the input layer from top to bottom, and the output of the upper layer node is the input of the lower layer node and finally propagates to the output. The weights of all network edges remain unchanged during propagation. After the prediction error is calculated, it enters the back propagation stage; that is, the error is returned to the input node in the reverse direction layer by layer [10].

In BP neural network, the prediction error of output node j of the t-th iteration will be in the form of error square:

$$\begin{aligned} E_j(t) &= \frac{1}{2}\left(\left|e_j(t)\right|\right)^2 \\ &= \frac{1}{2}\left(\left|Y_j(t)\right| - Y_j'(t)\right)^2, \end{aligned} \tag{1}$$

where $e_j(t)$ is the prediction error, $Y_j(t)$ is the sample observation value of the output node, and $Y_j'(t)$ is the output value of the output node. If the adder and sigmoid activation function are substituted into the above formula:

$$Y_j'(t) = f\left(U_j^N(t)\right). \tag{2}$$

The sigmoid function of the t-th iteration is

$$f\left(U_j^N(t)\right) = \frac{1}{\left(1 + e^{-U_j^N(t)}\right)}, \tag{3}$$

$$U_j^N(t) = \sum_i W_{ij}^N(t) O_i^N(t) + \theta_j(t), \tag{4}$$

where $U_j^N(t)$ is the calculation result of the adder:

$$N = (1, 2, \ldots, n). \tag{5}$$

W_{ij}^N is the weight of the network edge formed from the i-th hidden node of layer N to the j-th node of layer $n+1$, $O_i^N(t)$ is the output of the i-th hidden node of layer N, and $\theta_j(t)$ can be regarded as a constant term of linear combination [11]. The definition of the total prediction error at the output node of the t-th iteration is

$$E(t) = \frac{1}{2}\sum_{j}\left|e_j(t)\right|^2 = \frac{1}{2}\sum_{p=1}^{p}\sum_{j}\left(Y_{jp}(t) - Y_{jp}'(t)\right)^2, \tag{6}$$

where p is the number of samples. It can be seen that the t-th iteration error is a multivariate nonlinear function of the weights of network edges, the values of input variables and output values.

The purpose of weight adjustment in the network is to reduce the overall demand. Therefore, the t-th iteration must follow the direction in which the error plane descends the fastest, i.e., the direction of the negative gradient [12]. The network weight adjustment amount of the i-th node of layer N and the j-th output node of layer $N+1$ is shown in formula 7 and formula 8 according to the differential chain rule:

$$\Delta W_{ij}^n(t) = -\eta\frac{\partial E(t)}{\partial W_{ij}^n(t)} = -\eta\frac{\partial E(t)}{\partial e_j(t)} * \frac{\partial e_j(t)}{\partial Y'(t)} * \frac{\partial Y'(t)}{\partial U_j^n(t)} * \frac{\partial U_j^n(t)}{\partial W_{ij}^n(t)}, \tag{7}$$

$$\Delta W_{ij}^n(t) = -\eta e_j(t)(-1)f'\left(U_j^n(t)\right)O_i^n(t), \tag{8}$$

where η is the learning rate and the negative sign indicates the negative gradient direction. Since sigmoid activation function is adopted, as shown in formula:

$$f'\left(U_j^n(t)\right) = f\left(U_j^n(t)\right) * \left(1 - f\left(U_j^n(t)\right)\right). \tag{9}$$

Therefore, as shown in formula:

$$\Delta W_{ij}^n(t) = \eta e_j(t) * f'\left(U_j^n(t)\left(1 - f\left(U_j^n(t)\right)\right)\right) * O_i^n(t). \tag{10}$$

Make it as

$$\delta_j^n(t) = e_j(t) * f\left(U_j^n(t)\right)\left(1 - f\left(U_j^n(t)\right)\right). \tag{11}$$

The above formula is called the local gradient of node j:

$$\Delta W_{ij}^n(t) = \eta\delta_j^n(t) * O_i^n(t). \tag{12}$$

Therefore, the network weight adjustment of point j during $t+1$ iteration is

$$W_{ij}^n(t+1) = \left(\alpha W_{ij}^n(t) + \eta\delta_j^n(t)\right) * O_i^n(t). \tag{13}$$

Through calculation, the local gradient of the j-th node of the $N\,(N = 1, 2, \ldots, n, n+1)$ hidden layer is

$$\delta_j^N(t) = \frac{\partial E_j(t)}{\partial f\left(U_j^N(t)\right)} = \frac{\partial E_j(t)}{\partial f\left(O_j^N(t)\right)} * \frac{\partial f\left(O_j^N(t)\right)}{\partial f\left(U_j^N(t)\right)}, \tag{14}$$

$$\delta_j^N(t) = f'\left(O_j^N(t)\right)\sum_{i=1}^{i}\delta_i^{N+1}(t)W_{ij}^{N+1}(t). \tag{15}$$

In the calculation process, the network weights are adjusted according to (15) until all hidden layers are covered and all network weights are adjusted.

3.2. Determination of Network Structure. The complexity of the neural network is determined by the number of original layers and the number of hidden units in each layer [13]. Theoretically, although multi-layer networks can obtain more accurate analysis results, experiments show that, unless the actual problem requires, using networks with more than two hidden layers will make the problem solving more complex, and sometimes networks with multiple hidden layers are more difficult to obtain effective solutions. Therefore, it is most cost-effective to choose a network with a hidden layer [14]. There is no authoritative criterion for determining the number of hidden nodes. Usually, the more complex the problem is, the more hidden nodes are required. To solve this problem, we can first give a rough network structure and then gradually adjust it in the process of model training. Network structure is very important for neural network model. At the initial stage of model establishment, the empirical value method is adopted. First, the hidden layer is set as one layer. The default number of hidden nodes is as shown in formula:

$$\max\left(3, \frac{\left(n_i + n_j\right)}{20}\right), \tag{16}$$

where n_i, n_0, respectively, represent the number of input nodes and the number of output nodes [15]. The input node is 5, and the output node is 1, so the number of hidden nodes of the hidden layer is calculated

$$\max\left(3, \frac{(5+1)}{20}\right) = 3. \tag{17}$$

In the initial network selection, a hidden layer is selected, and three hidden nodes are determined as the initial model.

The weight adjustment from hidden layer to input layer is

$$\delta_{kp}^{1}(t) = f'\left(O_{kp}(t)\right)\sum_{p=1}^{45}\sum_{j=1}^{1}\delta_{jp}^{2}(t)W_{kj}^{2}, \tag{18}$$

$\delta_{kp}(t)$ is the local gradient of the hidden layer, as shown in

$$\Delta W_{ik}^{1}(t) = \eta\delta_{kp}^{1}(t)X_{kp}(t), \tag{19}$$

$$W_{ik}^{1}(t+1) = \alpha W_{ik}^{1}(t) + W_{ik}^{1}(t). \tag{20}$$

The iteration shall be carried out according to the above iteration method until the iteration cycle is 250 times.

Suppose the input layer of the BP network has n nodes, the hidden layer has q nodes, the output layer has m nodes, the weight between the input layer and the hidden layer is vki, the weight between the hidden layer and the output layer is wj, and the output of the hidden layer node is zk, as shown in Figure 2.

By comparing the results of the multiple regression model, it can be seen that the maximum error of the regression analysis results based on 6 influencing factors is 4321, the minimum error is 8, and the average error is less than 2164.5, the maximum error of the regression analysis results based on 3 principal components is 3529, the minimum error is 40, and the average error is less than 1734.5, while the maximum error of the BP neural network model based on 6 influencing factors is nearly 2500, the minimum error is about 500, and the average error is 1500, indicating that the BP neural network method is more suitable for college tuition. At the same time, it is found that the number of influencing factors has an impact on the prediction effect of the network.

It can be seen from the above prediction results and error effect diagrams that the BP neural network method based on 6 major factors has better prediction effect than the regression analysis method based on 6 major factors and 3 major factors, indicating that BP neural network is used in college tuition pricing. The specific results are shown in Table 1.

The average impact value (MIV—mean impact value) method is used to find the input items that have a greater impact on the results, and then the neural network is used to filter variables. MIV is considered to be one of the best indicators for evaluating the correlation of variables in neural networks, and it also opens up new ideas for solving such problems. The specific calculation process of MIV variable screening implementation: after the network training is over, add or subtract 10% of each independent variable in the training sample P on the basis of the original value to form the training samples P1 and P2, use P1 and P2 as simulation samples, respectively, use the established network to simulate, get two simulation results A1 and A2, and find the difference between A1 and A2—the change value of the output after changing the independent variable (IV, impact value), and IIV. According to the number of observed cases, the average influence value (MIV) of the independent variable on the dependent variable—network output—is obtained. Calculate the MIV value of each independent variable one by one according to the above method. Finally, according to the absolute value of MIV, the independent variables are sorted, and the importance of the influence of the independent variables on the output is sorted, so as to determine the degree of influence of the input on the prediction effect, that is, to achieve filtering of variables. The specific process of the MIV variable screening method is shown in Figure 3.

4. Results and Analysis

For the research on the current situation of cost control, this section takes Y University as an example.

The school's income includes financial appropriation income, business income, income turned over by affiliated units, and other income [16]. The financial appropriation income is on the rise, and its proportion is also increasing year by year. By 2021, the financial appropriation income will be 862.8736 million yuan, accounting for 65.69% of the total income of the university. This shows that the Ministry of Education has given greater financial support to Y University and shows that the country is paying more for vocational training. More funding is needed to increase school efficiency and support school improvement. The overall amount of business income is on the rise, but its proportion is decreasing. This is mainly because the school's financial allocation income has increased significantly, and its proportion is increasing year by year [17] as shown in Figure 4.

It can be seen from the above figure that the total income of Y University has shown an upward trend from 2012 to 2021. Among them, the larger increase in 2012 was due to the higher financial appropriation income in this year [18]. Other income mainly includes interest income, non-equivalent financial appropriation income, and appropriation income from other departments. In 2012 and 2014, the income handed over by affiliated units mainly came from the income handed over by a hotel in Y University, which will not be handed over after 2015.

4.1. Overview of Tuition Status in the past 10 Years. With the development of education, the scale of Y University is expanding, and the cost of education is also increasing correspondingly. Over the past 10 years, the total cost of school education has shown a fluctuating growth. In 2012, the total cost of school education was 569 million yuan. In 2021, the total cost of school education reached 1308178000 yuan, an increase of 2.3 times. At the same time, it can be seen that the school education cost increased significantly in 2012, mainly because the school had more other capital expenditures in 2012, and the average student expenditure also showed an increasing trend as a whole. However, the cost increases too fast, and it is easy to have a shortage of funds, which further increases the difficulty of the school's financial cost management. Therefore, it is necessary to study the education cost of Y University, so as to control its expenditure and improve the efficiency of the use of capital resources. However, the overall trend of education cost is consistent with the law of income, which reflects the principle of determining expenditure by income and

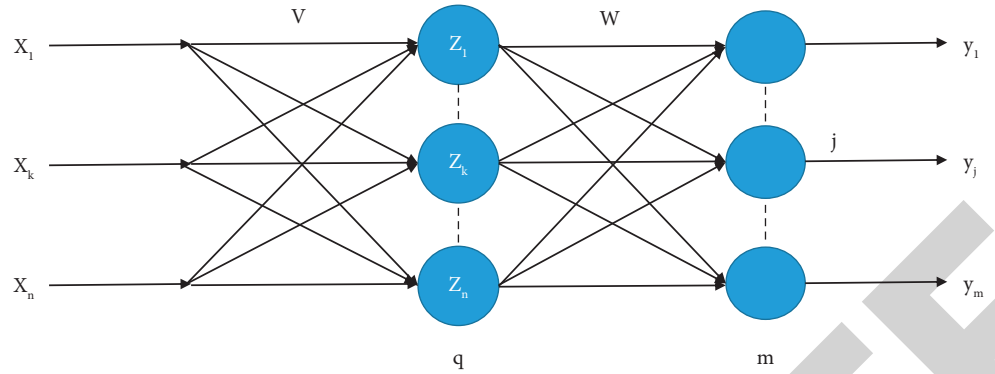

Figure 2: Topological structure of three-layer neural network.

Table 1: 6-factor and 3-factor regression analysis and 6-factor BP neural network error comparison.

Error	6-factor BP neural network	6-factor regression analysis	3-factor regression analysis
Influencing factors	X1 X2 X3 X4 Xn	X1 X2 X3 X4 X5 Xn	X1 X2 X3
Maximum error	2500	4321	3529
Minimum error	500	8	40
Average error	1500	2164.5	1734.5

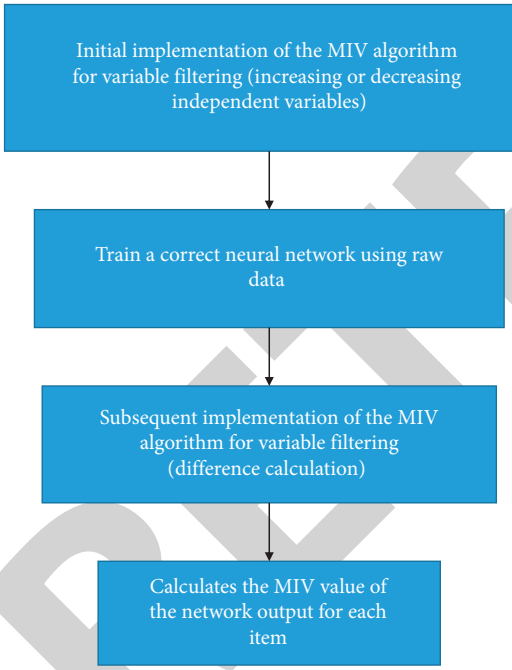

Figure 3: Flowchart of variable screening based on BP neural network.

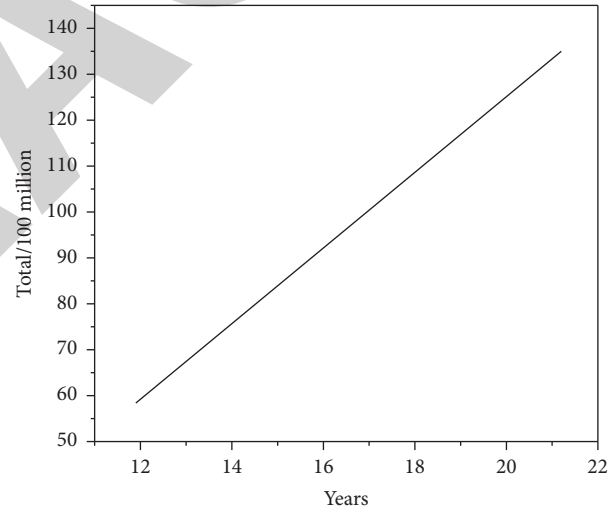

Figure 4: Income statistical histogram in recent 10 years.

balancing revenue and expenditure [19]. The cost classification of Y University education includes six aspects: wage and welfare expenditure, commodity service expenditure, subsidies to individuals and families, subsidies to enterprises and institutions, debt interest expenditure, and other capital expenditure [20].

The larger part is the wage and welfare expenditure and the commodity and service expenditure, the proportion of which changes in the range of 20%–40% [21]. Among them, the wage and welfare expenditure showed an upward trend over time, from 141721300 yuan in 2012 to 523612500 yuan in 2021, and the proportion also maintained an increasing trend, from 24.91% in 2012 to 40.03% in 2021, an increase of 15 percentage points. And in recent 10 years, the overall trend is downward. The decrease of debt interest expenditure year by year shows that the loan amount of Y University is decreasing, and the debt risk it faces is also relatively reduced. Among the average total expenditures of general institutions of higher learning under the central ministries and commissions, the expenditure on wages and welfare accounted for 26.13%, the expenditure on subsidies to individuals and families accounted for 23.85%, the expenditure on goods and services accounted for 26.42%, other capital expenditures accounted for 15.35%, and the expenditure on capital construction accounted for 8.25%. In 2015, the wage and welfare expenditure of Y University was

slightly lower than the overall level of China. Compared with the average level of China, the subsidy to individuals and families was significantly lower, but the expenditure on goods and services was much higher than the average level of China [22].

4.2. Detailed Analysis of Education Cost in Recent 10 Years. Y University wages and health benefits include base wages, allowances, other health services, wages and other wages, and medical expenses.

The total wages and benefits have shown an overall growth trend in the past 10 years, from 142 million yuan in 2012 to 524 million yuan in 2021, an increase of nearly 2.7 times. From 2016 to 2021, the number of teaching staff was 3200, but the per capita salary and welfare increased from 117300 yuan in 2016 to 163600 yuan in 2021, with a growth rate of 39.47%. It can be seen that Y University pays more and more attention to its teaching staff. Among them, performance salary and other salary and welfare expenses account for a large proportion in the whole salary and welfare expenses, with a total proportion of more than 70%, or even high. The level of performance pay is related to the educational background, length of service, professional title, position, and other factors of the teaching staff. The implementation of performance pay can mobilize the enthusiasm of the teaching staff, promote the development of the school cause, improve the teaching quality, improve the level of running a school, and achieve innovative development. Other salary and welfare expenses mainly refer to the salary expenses of the nonenterprise teaching staff of the school. Before 2020, other social security refers to medical insurance, work injury insurance, maternity insurance, and endowment insurance for faculty members with career titles. After 2020, the endowment insurance for noncareer faculty members will also be included. Therefore, other social security will increase significantly in 2020 [23]. The subsidies to individuals and families include retirement fees, housing provident fund, financial aid, and other subsidies to individuals and families.

The proportion of retirement expenses in the whole subsidy expenditure for individuals and families is not large, and the overall proportion shows a downward trend. The two subjects with the largest proportion are retirement expenses and financial aid, with a total proportion of more than 60%. Among them, the scholarships granted by Y University to students are included in the financial aid subject for accounting. In addition to the national scholarships such as "national scholarships, national inspirational scholarships, home-based student loans, and national financial aid," the university also has a student reward and funding system such as "school scholarships, on campus subsidies, and on campus work study posts." Each doctoral student receives an annual subsidy of 8000 yuan, and each master graduate student receives an annual subsidy of 2000 yuan. The absolute value of the housing provident fund is increasing year by year, accounting for more than 10%, with little fluctuation. In 2021, the amount of the housing provident fund in the individual and family subsidies is 0 because Y University put the housing provident fund into the salary and welfare expenditure for accounting in 2021.

Y University's subsidy to enterprises and institutions only includes one item, namely, the subsidy to public institutions, which is the subsidy to the three independent colleges under Y University for the education and teaching work of independent colleges as shown in Table 2.

Debt interest includes both Chinese debt interest payment and American debt interest payment. During the nine years from 2012 to 2021, Y University only paid interest on Chinese debt. In 2021, both Chinese debt interest payment and American debt interest payment came from a Japanese yen loan project of Y University in 2021.

According to the data of recent 10 years, the debt interest expenditure of Y University shows a downward trend as a whole. The average student debt interest payment decreased from 1500 yuan in 2013 to 0300 yuan in 2021. The gradual optimization of this debt environment is conducive to the normal operation of Y University's teaching and scientific research.

4.3. Analysis on the Influencing Factors of Education Cost. Considering the cost economy of the research method itself, and referring to the idea of equivalence in cost accounting, according to the financial budget rules of Y University, the number of master's students is converted into the number of undergraduates at the ratio of 2.0, the number of doctoral students into the number of undergraduates at the ratio of 3.0, and the number of remaining students into the number of undergraduates at the ratio of 3.0. In addition, as LR college is an independent college under Y University, Y University will provide it with exclusive subsidies every year. Therefore, the number of students in LR college is not included in the total number of students and is accounted for independently.

The professors of the university are converted into general lecturers at the ratio of 2.0, and the associate professors are converted into general lecturers at the ratio of 1.5 to confirm the resource drivers and allocate resources, so as to ensure the rationality of accounting.

The school equipment includes teaching multimedia equipment, large-scale experimental equipment, etc. The equipment of Y University worth more than 200000 yuan is selected as the basis for accounting, as shown in Table 3.

The equation of multiple linear regression model is usually expressed as

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \ldots + \beta_j X_j + \ldots + \beta_k X_k + \mu, \tag{21}$$

where k represents the number of explanatory variables.

$$\beta_j \, (j = 1, 2, L, k). \tag{22}$$

The above formula is the coefficient, and μ is the random error. After the sample data are substituted into the regression analysis, the judgment shall be made according to the output results. By summarizing the research cost of relevant literature and according to the previous analysis, the

Table 2: Details of subsidies to enterprises and institutions from 2012 to 2021.

Project	Subsidies for public institutions	Total
2012	5545.32	5545.32
2013	4595.39	4595.39
2014	3365.94	3365.94
2015	3679.68	3679.68
2016	3997.23	3997.23
2017	3740.12	3740.12
2018	4454.54	4454.54
2019	4936.23	4936.23
2020	6515.94	6515.94
2021	—	—

Table 3: Statistics of important equipment quantity.

Particular year	Equipment quantity (set)
2012	119
2013	121
2014	142
2015	175
2016	175
2017	192
2018	218
2019	223
2020	238
2021	251

educational cost of Y University is selected as the explanatory variable and expressed by y. The number of students (ST), number of faculty (TE), power consumption (M), water consumption (M'), floor area (S), building area (S'), number of students (LR), and number of important equipment (EQU) are selected as explanatory variables. See Table 4 for details.

Combined with the analysis of the influencing factors of education cost and the introduction of the above models, the following regression model of education cost prediction is established for empirical test:

$$Y = \beta_0 + \beta_1 ST + \beta_2 TE + \beta_3 M + \beta_4 M' + \beta_5 S + \beta_5 S' + \beta_7 LR + \beta_8 EQU + \mu. \quad (23)$$

The software SPSS.22 is used to make descriptive statistics on all variables, and the results are shown in Table 5.

From the perspective of dependent variables, the minimum value of education cost y is 567.812 million yuan, and the maximum value is 1308.1781 million yuan. According to the original data, it is found that the time point corresponding to 567.812 million yuan is 2010, and the time point corresponding to the maximum value is 2021. In general, the education cost of Y University is on the rise. From the perspective of independent variables, in the past 10 years, except for the general trend of the number of students in LR college, the overall trend of other independent variables is in the state of growth, which is consistent with the requirements of Y University to continuously expand the scale and improve the quality of running schools in recent years.

Input the data into the software SPSS.22, use the linear regression function in the analysis to process the sample data, and study the correlation between Y and eight independent variables. First, check the decisive coefficient of the model to judge the fitting degree. The R-square is 0.993, and the adjusted R-square is 0.935, so the fitting degree of the model is good, which can completely reflect the relationship between the data as shown in Table 6.

Table 4: Definition of variables.

Variable properties	Variabl symbol	Variable interpretation
Explained variable	Y	Education cost
Explanatory variable	ST	Number of students
Explanatory variable	TE	Number of faculty
Explanatory variable	M	Electricity consumption
Explanatory variable	M′	Water consumption
Explanatory variable	S	Area covered
Explanatory variable	S′	Built-up area
Explanatory variable	LR	Number of LR students
Explanatory variable	EQU	Number of important equipment

Secondly, when doing linear regression analysis, we can analyze the significance of the model according to the obtained ANOVA value and then judge the effectiveness of the overall model. The significance level of the whole model is 0.001, which indicates that the overall effectiveness and reliability of the model are high, and further analysis can be carried out as shown in Table 7.

It can be seen from Table 8 that among the eight selected explanatory variables, only the number of students, the number of faculty, water and electricity consumption, the number of students in LR college, and the number of important equipment have reached a significant level, and the relationship between the floor area and the building area and the education cost is not significant as shown in Table 8.

Since the relationship between the variables represented by the floor area (S) and the building area (S') and the education cost is not significant, they will be eliminated in the subsequent analysis to ensure the reliability of the regression results, and then the regression analysis will continue using the software SPSS.22. The output results are shown in Table 9, Table 10 and Table 11.

Combining the above, we can get the result of the final design-level equation. The different coefficients of the equilibrium regression are all positive, indicating that the total cost of training will further increase with the increase in the number of teachers and students. Parameter symbols have significant operational value.

The cost control system of colleges and universities is a unified whole, which includes subsystems such as cost organization, decision-making, implementation, information, and performance evaluation. If a university wants to implement effective education cost control, it should first establish an organizational system of the cost control system; that is, under the guidance of university leaders, it should establish a vertical cross-responsibility center with each functional department as the horizontal and each department and individual as the vertical. Each responsibility center shall prepare performance reports

Table 5: Descriptive statistics of variables.

Variable	N	Minimum value	Maximum	Mean value	Standard deviation
Y	10	56,781.20	130,817.81	96,111.94	29,275.54
ST	10	28,431.00	41,682.00	32,884.10	4,274.27
TE	10	2,940.50	4,001.50	3,625.60	330.56
M	10	20,233,846.15	39,523,653.85	31,848,942.31	6,322,808.69
M′	10	1,426,000.00	3,759,480.00	2,616,276.00	741,194.13
S	10	4,000.00	5,600.00	4,320.00	674.62
S′	10	890,000.00	1,060,000.00	996,000.00	62,218.25
LR	10	6,756.00	15,837.00	12,585.60	3,269.40
EQU	10	119.00	251.00	185.60	47.43

Table 6: Model summary.

Model	R	R^2	Adjust R^2	Standard estimation error
1	0.996[a]	0.993	0.935	7,217.56

Table 7: Significance test of overall linearity (ANOVA[b]).

	Sum of squares	df	Mean square	F	Sig (b)
Regression	7,143,459,915.51	8	892,932,489.44	27.141	0.001
Residual	52,093,229.66	1	52,093,229.66		
Total	7,195,553,145.17	9			

Table 8: Multiple regression coefficients of each variable.

Variable	Denormalization coefficient		Standardization coefficient	T	Significance
	B	Standard error	Bata		
Constant	−278,835.736	477,978.603		−1.583	0.008
ST	15.031	9.924	2.272	2.515	0.037
TE	−170.857	130.412	−1.997	−2.310	0.042
M	0.006	0.004	1.421	2.446	0.038
M′	0.026	0.026	0.674	1.981	0.041
S	−5.206	28.380	−0.124	−1.183	0.885
S′	−0.045	0.219	−0.099	−1.206	0.871
LR	16.921	9.618	1.956	2.759	0.033
EQU	458.259	768.972	0.769	1.596	0.045

Table 9: Model summary.

Model	R	R^2	Adjust R^2	Standard estimation error
1	0.996[a]	0.992	0.977	4,257.061,81

Table 10: Significance test of overall linearity (ANOVA[b]).

	Sum of squares	df	Mean square	F	Sig
Regression	7,141,185,419.490	6	1,190,197,569.915	65.675	0.001
Residual	54,367,725.684	3	18,122,575.228		
Total	7,195,553,145.174	9			

on schedule according to the work results, find out the gap between the actual cost amount and the budget amount, then analyze why such differences occur and timely report to the superior department to find out the problems existing in the work, take effective solutions, and implement management according to the specification requirements. Secondly, from the aspect of power, we should set up the mutual checks and balances of the corporate governance structure of colleges and universities; that is, we should not only clarify the powers and responsibilities of the president, vice presidents, and the directors of various functional departments, but also let them check and balance each other, so as to promote their mutual restriction and cooperation at the same time, so as

Table 11: Multiple linear regression coefficients of each variable.

Variable	Denormalization coefficient		Standardization coefficient	T	Significance
	B	Standard error	Bata		
Constant	−360,666.718	146,650.206		−2.459	0.001
ST	14.020	4.120	2.119	3.403	0.042
TE	−156.666	40.113	−1.832	−3.9060	0.030
M	0.006	0.002	1.313	3.704	0.034
M′	0.021	0.010	0.595	2.274	0.045
LR	17.052	5.595	1.972	3.046	0.047
EQU	551.595	261.381	0.930	2.122	0.049

to promote the scientific and effective management of colleges and universities.

At present, although the cost accounting system of colleges and universities in China has made some achievements, its overall development is still in the exploration period. Therefore, only by continuously reforming and innovating the accounting system in colleges and universities can we meet the requirements of the "supervision and examination measures for the cost of higher education and training (Trial)." Only in this way can we apply more efficient procedures and lay a solid foundation for the calculation of college tuition fees. In addition, "higher schools" can combine management appropriately and competently, establish a financial accounting system according to the actual situation of colleges and universities, improve financial management functions, and integrate cost accounting principles with cost management to achieve process consistency. Establish a set of cost accounting system that meets both the accounting system and the development needs of the times.

University expenditure can be divided into capital expenditure and income expenditure. Capital expenditure means that the expenditure incurred can be allocated to multiple accounting periods. Income expenditure refers to the income obtained through this expenditure only related to the current accounting year. In the process of accounting, capital expenditure is first included in the asset account and then transferred to the appropriate expense account by stages according to the income. Income expenditure is directly included in the relevant cost items of the current year. Only by correctly distinguishing between capital expenditure and income expenditure, can we reasonably determine which expenditure should be directly included in the current period and accounted in the cost of colleges and universities, and which expenditure should be accounted in the cost of colleges and universities after amortization.

When each cost occurs, the relevant supervision and Audit Department of the University shall specify the specific purpose of each cost and strictly trace some nonconforming or nonspecific expenses with large amount, so as to resolutely put an end to waste. Some avoidable nonessential expenditures should be strictly controlled. Those that need to be simplified should be simplified as much as possible. Before relevant equipment and tools are scrapped, they must think twice and carefully, and those that can be reused must be reused; take the plan as the guide, make careful arrangements, make full use of modern information means, set up and refine accounting subjects, calculate costs reasonably and accurately, and achieve the purpose of cost control under the premise of following the existing "accounting system of colleges and universities" and "financial system of colleges and universities."

Employees spend a significant portion of the cost of college. The human cost of Y University accounts for about 50% of the total tuition fee. Therefore, we need to pay attention to adhering to higher education management. The value of managing human resources can be accomplished through two factors: one is to make it easier for employees to teach; the other is to improve employee job performance. Achieving cost savings and improving employee performance are important for colleges and universities. This requires colleges and universities to implement measures to reform the personnel system, solve the problems of overstaffed personnel and unclear responsibilities between departments within colleges and universities, and try to ensure the rationalization of the proportion among students, teachers, administrative personnel, and logistics support personnel. An important link in the reform of the personnel system is to implement the appointment system and follow the principle of "three determinations" (department, position, and staffing).

The two measures of department simplification and staffing compression are to improve the team structure, reduce personnel, improve efficiency, and promote the development of colleges and universities. Streamlining departments and reducing headcount can improve efficiency, but in the specific implementation process, it should be analyzed according to specific conditions, and different personnel should adopt different streamlining methods. China's higher education is in the stage of rapid development. Due to the rapid increase in the number of college students, the number of teachers according to the existing best teacher-student ratio may be more than the existing number. Therefore, we should proceed from reality and take corresponding measures according to the specific problems faced by colleges and universities. For the staff other than university teachers, the university should try its best to streamline, reduce the redundant staff, improve the work efficiency of the remaining staff, and eliminate unnecessary personnel expenditure.

Encouraging the rational flow of university staff can enable teachers to give full play to their expertise, form a dynamic and vibrant management system for the teaching staff, and constantly promote the optimization and

upgrading of the teaching staff. Redundant personnel after downsizing shall be properly resettled through job transfer and diversion, and efforts shall be made to create an employment environment so that they can give full play to their talents. For administrative personnel and logistics staff, the method of "one person with multiple posts and one post with multiple duties" should be implemented. By configuring the best educational resources, the quality of college assets and human resources can be incorporated into the overall game, and the benefits of colleges and universities can be improved.

5. Conclusion

This paper uses a variety of regression models to explore the impact of Y University's tuition on the number of students, teachers, and resource use, and develops multiple loops to study its impact on the tuition of Y University. The impact of the tuition fee of Y University on students, teachers, water and electricity consumption, equipment, and so on is determined. Therefore, Y University should pay attention to the consumption of human resources, material resources, and energy, establish relevant systems in time, ensure the optimal allocation of resources, and promote the development of the university.

Data Availability

The labeled data set used to support the findings of this study is available from the corresponding author upon request.

Conflicts of Interest

The author declares that there are no conflicts of interest.

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